

9.1 Analytical Thinking and Problem Solving

Analytical thinking and problem solving skills are required for business analysts to analyze problems and opportunities effectively, identify which changes may deliver the most value, and work with stakeholders to understand the impact of those changes.

Business analysts use analytical thinking by rapidly assimilating various types of information (for example, diagrams, stakeholder concerns, customer feedback, schematics, user guides, and spreadsheets), and identifying which are relevant. Business analysts should be able to quickly choose effective and adaptable methods to learn and analyze the media, audiences, problem types, and environments as each is encountered.

Business analysts utilize analytical thinking and problem solving as they facilitate understanding of situations, the value of proposed changes, and other complex ideas.

Possessing a sound understanding of the analytical thinking and problem solving core competencies allows business analysts to identify the best ways to present information to their stakeholders. For example, some concepts are more easily understood when presented in diagrams and information graphics rather than by paragraphs of text. Having this understanding assists business analysts when planning their business analysis approach and enables them to communicate business analysis information in a manner that suits the material being conveyed to their audience.

Analytical Thinking and Problem Solving core competencies include:

- Creative Thinking,
- Decision Making,
- Learning,
- Problem Solving,
- Systems Thinking,
- Conceptual Thinking, and
- Visual Thinking.

9.1.1 Creative Thinking

.1 Purpose

Thinking creatively and helping others to apply creative thinking helps business analysts to be effective in generating new ideas, approaches, and alternatives to problem solving and opportunities.

.2 Definition

Creative thinking involves generating new ideas and concepts as well as finding new or different associations between existing ideas and concepts.

It helps overcome rigid approaches to problem solving by questioning conventional approaches and encouraging new ideas and innovations that are appropriate to the situation. Creative thinking may involve combining, changing, and reapplying existing concepts or ideas. Business analysts can be effective in promoting creative thinking in others by identifying and proposing alternatives, and by asking questions and challenging assumptions.

.3 Effectiveness Measures

Measures of effective creative thinking include:

- generating and productively considering new ideas,
- exploring concepts and ideas that are new,
- exploring changes to existing concepts and ideas,
- generating creativity for self and others, and
- applying new ideas to resolve existing problems.

9.1.2 Decision Making

.1 Purpose

Business analysts must be effective in understanding the criteria involved in making a decision, and in assisting others to make better decisions.

.2 Definition

When a business analyst or a group of stakeholders is faced with having to select an option from a set of alternatives, a decision must be made on which is the most advantageous for the stakeholders and the enterprise. Determining this involves gathering the information that is relevant to the decision, analyzing the relevant information, making comparisons and trade-offs between similar and dissimilar options, and identifying the most desirable option. Business analysts document decisions (and the rationale supporting those decisions) to use them as a reference in the event a similar decision is required in the future or if they are required to explain why a decision was made.

.3 Effectiveness Measures

Measures of effective decision making include:

- the appropriate stakeholders are represented in the decision-making process,
- stakeholders understand the decision-making process and the rationale behind the decision,
- the pros and cons of all available options are clearly communicated to stakeholders,
- the decision reduces or eliminates uncertainty, and any remaining uncertainty is accepted,

- the decision made addresses the need or the opportunity at hand and is in the best interest of all stakeholders,

- stakeholders understand all the conditions, environment, and measures in which the decision will be made, and
- a decision is made.

9.1.3 Learning

.1 Purpose

The ability to quickly absorb new and different types of information and also modify and adapt existing knowledge allows business analysts to work effectively in rapidly changing and evolving environments.

.2 Definition

Learning is the process of gaining knowledge or skills. Learning about a domain passes through a set of stages, from initial acquisition and learning of raw facts, through comprehension of their meaning, to applying the knowledge in day-to-day work, and finally analysis, synthesis, and evaluation. Business analysts must be able to describe their level of understanding of the business domain and be capable of applying that level of understanding to determine which analysis activities need to be performed in a given situation. Once learning about a domain has reached the point where analysis is complete, business analysts must be able to synthesize the information to identify opportunities to create new solutions and evaluate those solutions to ensure that they are effective.

Learning is improved when the learning technique is selected based on the required learning outcomes.

Learning techniques to consider include:

- **Visual:** learning through the presentation of pictures, photographs, diagrams, models, and videos.
- **Auditory:** learning through verbal and written language and text.
- **Kinesthetic:** learning by doing.

Most people experience faster understanding and longer retention of information when more than one learning technique is used.

.3 Effectiveness Measures

Measures of effective learning include:

- understanding that learning is a process for all stakeholders,
- learning the concepts presented and then demonstrating an understanding of them,
- demonstrating the ability to apply concepts to new areas or relationships,
- rapidly absorbing new facts, ideas, concepts, and opinions, and
- effectively presenting new facts, ideas, concepts, and opinions to others.

9.1.4 Problem Solving

.1 Purpose

Business analysts define and solve problems in order to ensure that the real, underlying root cause of a problem is understood by all stakeholders and that solution options address that root cause.

.2 Definition

Defining a problem involves ensuring that the nature of the problem and any underlying issues are clearly understood by all stakeholders. Stakeholder points of view are articulated and addressed to understand any conflicts between the goals and objectives of different groups of stakeholders. Assumptions are identified and validated. The objectives that will be met once the problem is solved are clearly specified, and alternative solutions are considered and possibly developed. Alternatives are measured against the objectives to determine which possible solution is best, and identify the value and trade-offs that may exist between solutions.

.3 Effectiveness Measures

Measures of effective problem solving include:

- confidence of the participants in the problem solving process,
- selected solutions meet the defined objectives and solve the root cause of the problem,
- new solution options can be evaluated effectively using the problem solving framework, and
- the problem solving process avoids making decisions based on unvalidated assumptions, preconceived notions, or other traps that may cause a suboptimal solution to be selected.

9.1.5 Systems Thinking

.1 Purpose

Understanding how the people, processes, and technology within an organization interact allows business analysts to understand the enterprise from a holistic point of view.

.2 Definition

Systems theory and systems thinking suggest that a system as a whole has properties, behaviours, and characteristics that emerge from the interaction of the components of that system. These factors are not predictable from an understanding of the components alone. For example, just because a business analyst knows that a customer may return an item they purchased doesn't give the business analyst the full picture. The analyst must analyze the impact the return has on such items as inventory, finance, and store clerk training. In the context of systems theory, the term system includes the people involved, the

interactions between them, the external forces affecting their behaviour, and all other relevant elements and factors.

.3 Effectiveness Measures

Measures of effective use of systems thinking include:

- communicating how a change to a component affects the system as a whole,
- communicating how a change to a system affects the environment it is in, and
- communicating how systems adapt to internal and/or external pressures and changes.

9.1.6 Conceptual Thinking

.1 Purpose

Business analysts routinely receive large amounts of detailed and potentially disparate information. They apply conceptual thinking skills to find ways to understand how that information fits into a larger picture and what details are important, and to connect seemingly abstract information.

.2 Definition

Conceptual thinking is about understanding the linkage between contexts, solutions, needs, changes, stakeholders, and value abstractly and in the big picture. It involves understanding and connecting information and patterns that may not be obviously related. Conceptual thinking involves understanding where details fit into a larger context. It involves using past experiences, knowledge, creativity, intuition, and abstract thinking to generate alternatives, options, and ideas that are not easily defined or related.

Conceptual thinking in business analysis is specifically about linking factors not easily defined to the underlying problem or opportunity, models, or frameworks that help stakeholders understand and facilitate themselves and others through change. It is needed to connect disparate information from a multitude of stakeholders, objectives, risks, details, and other factors. With this information it generates options and alternatives for a solution, and communicates this information to others while encouraging them to generate ideas of their own.

.3 Effectiveness Measures

Measures of effective conceptual thinking include:

- connecting disparate information and acting to better understand the relationship,
- confirming the confidence and understanding of the concept being communicated with stakeholders,
- formulating abstract concepts using a combination of information and uncertainty, and

- drawing on past experiences to understand the situation.

9.1.7 Visual Thinking

.1 Purpose

The ability to communicate complex concepts and models into understandable visual representations allows business analysts to engage stakeholders and help them understand the concepts being presented.

.2 Definition

Visual thinking skills allow business analysts to create graphical representations of the concepts or systems being discussed. The goal of these graphical representations is to allow stakeholders to easily understand the concepts being presented, and then provide input. Visual thinking requires that the analyst make abstractions and then find suitable graphic devices to represent them.

Visual thinking is visualizing and creating simple visual concepts, graphics, models, diagrams, and constructs to convey and integrate non-visual information. In performing business analysis, large amounts of information and complex connections between contexts, stakeholders, needs, solutions, changes, and value are communicated. Visuals represent this information and its complexities, allowing stakeholders and audiences to learn more quickly, process the information, and connect points from each of their contexts.

Visual thinking also allows the audience to engage and connect concepts more quickly and freely into their context, as well as understand and appreciate others' contexts more clearly.

.3 Effectiveness Measures

Measures of effective visual thinking include:

- complex information is communicated in a visual model which is understandable by stakeholders,
- visuals allow for comparisons, pattern finding, and idea mapping with participants,
- productivity increases due to increased learning, quick memory, and follow through from effective visuals,
- stakeholders are engaged at a deeper level than with text alone, and
- stakeholders understand critical information which may have been missed if presented in textual content alone.